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7. The vehicle system defined in claim 6 further comprising:

control circuitry configured to apply an electric field to the holographic polymer dispersed liquid crystal material.

8. The vehicle system defined in claim 1 wherein the optical combiner comprises an array of angled reflectors.

9. The vehicle system defined in claim 1 wherein the display unit is selected from the group consisting of: a light-field display unit, a liquid crystal display unit, an organic light-emitting diode display unit, an inorganic light-emitting diode display unit, a silicon display unit, a digital light processing display unit, a microelectromechanical scanned display unit, a holographic display unit, a quantum dot display unit, and a projection display unit.

10. The vehicle system defined in claim 1 wherein the combiner comprises a plurality of holographic optical elements and wherein each holographic optical element comprises a hologram of at least one color.

11. A head-up display that reflects display output off of a side window that is located on a door of a vehicle towards an interior of the vehicle, the side window having inner and outer layers, the head-up display comprising:

a display unit mounted in the door that produces the display output and that comprises at least one laser;

an optical element in the door that couples the display output out of the door to the interior of the vehicle; and

a holographic optical element interposed between the inner and outer layers of the side window that directs the display output from the display unit towards the interior of the vehicle, wherein light from the display unit strikes the holographic optical element at an angle of incidence and is directed from the holographic optical element towards the interior of the vehicle at an output angle that is different from the angle of incidence.

12. The head-up display defined in claim 11 wherein the display unit comprises a transmissive display with an array of pixels and a backlight.

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13. The head-up display defined in claim 12 wherein the at least one laser forms part of the backlight.

14. The head-up display defined in claim 11 further comprising an anti-reflective coating on the holographic optical element.

15. The head-up display defined in claim 11 wherein the holographic optical element comprises a photopolymer having regions with a first refractive index alternating with regions of a second refractive index that is different than the first refractive index.

16. The head-up display defined in claim 11 wherein the holographic optical element comprises a switchable diffraction grating.

17. The head-up display defined in claim 16 wherein the switchable diffraction grating comprises polymer dispersed liquid crystal material.

18. The head-up display defined in claim 11 wherein the display unit comprises a projection display unit.

19. A head-up display that reflects display output off of a side window that is located on a door of a vehicle towards an interior of the vehicle, comprising:

a display unit that produces display output, wherein the display unit is mounted in the door of the vehicle;

an optical element in the door that couples the light out of the door to the interior of the vehicle; and

a diffractive optical element on the side window that directs light towards the interior of the vehicle, wherein light from the display unit strikes the diffractive optical element at an angle of incidence and is directed from the diffractive optical element towards the interior of the vehicle at an output angle that is different from the angle of incidence.

20. The head-up display defined in claim 19 wherein the diffractive optical element comprises a photopolymer having regions of a first refractive index interspersed with regions of a second refractive index that is different than the first refractive index.

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